

Claims

1. An on-chip system comprising:

at least one carrier (10) integrally holding a plurality of parts (50);

an assembly area (100) having a cavity provided with alignment means; and

a transport (200, 250) for moving said at least one carrier (10) to said assembly area (100), wherein said at least one carrier (10), said assembly area (100) and said transport (200, 250) are integral to said substrate.

2. The on-chip system as recited in claim 1, wherein said cavity is provided with a plurality of posts.

3. The on-chip system as recited in claim 2, wherein said plurality of posts guides said plurality of parts into place within said cavity, said parts being stacked in a pre-assigned order.

4. The on-chip system as recited in claim 1, wherein said alignment means are sidewalls of said cavity.

5. The on-chip system as recited in claim 1, wherein said plurality of parts are detached from said carrier after being placed in said cavity.

6. The on-chip system as recited in claim 1, wherein said plurality of parts are attached to said carrier by mechanical tabs (70).

7. The on-chip system as recited in claim 6, wherein said mechanical tabs (70) are removed by isotropic etch.

8. The on-chip system as recited in claim 6, wherein said mechanical tabs (70) are removed by electrical current that causes mechanical destruction of said tabs.
9. The on-chip system as recited in claim 6, wherein said mechanical tabs (70) are removed by laser ablation.
10. The on-chip system as recited in claim 1, wherein said plurality of parts are attached to said carrier by filling a gap between said carrier and said plurality of parts with material that is selectively etched with respect to the material that said carrier and said plurality of parts are made of.
11. The on-chip system as recited in claim 1, wherein said carrier is removed from said assembly area after that said parts have been detached.
12. The on-chip system as recited in claim 1, wherein the carrier remains in-situ after detaching said plurality of parts.
13. The on-chip system as recited in claim 1, wherein said plurality of parts and said assembly area are fabricated concurrently and assembled.
14. The on-chip system as recited in claim 1, wherein said transport means are controlled by driving means.
15. The on-chip system as recited in claim 14, wherein said driving means comprise comb drives coupled to gears.
16. The on-chip system as recited in claim 15, wherein said gears engage matching teeth on said carrier
17. The on-chip system as recited in claim 16, wherein said gears are provided with a shoulder to stabilize said carrier.

18. The on-chip system as recited in claim 17, wherein said shoulders ride over said matching teeth positioned on the sides of said carrier.

19. An on-chip system comprising:

a plurality of carriers respectively holding a plurality of parts, said parts being integral to said respective carriers;

an assembly area having a cavity provided with alignment means, said alignment means further comprising means for stacking said carriers; and

at least one transport means for moving said plurality of carriers to said assembly area, wherein said at least one carrier, said assembly area and said transport are integral to said substrate.

20. The on-chip system recited in claim 19, wherein said alignment means and said sidewalls of said cavity are sloped to aid align said carriers.

21. The on-chip system recited in claim 19, wherein said assembled parts are assembled in-situ

22. The on-chip system recited in claim 19, wherein said assembled parts are transferred to a substrate as a stand-alone device

23. The on-chip system recited in claim 19, wherein said assembled parts are transferred as a sub-assembly added to sub-assemblies of a similar type.